APPARATUS AND METHOD FOR EXPOSING A RADIATION SENSITIVE LAYER BY MEANS OF CHARGED PARTICLES AS WELL AS A MASK FOR THIS PURPOSE

Abstract

A projection apparatus for imaging a pattern of a mask onto a substrate by means of a beam of projected charged particles is disclosed. The apparatus includes a radiation sensitive layer. The apparatus also includes a mask. The mask includes a membrane layer made of a first material, scattering regions forming the pattern and made of a second material scattering the charged particles more than the membrane layer, and a plurality of straightly extending supporting struts spaced apart from one another and supporting the membrane layer together with the scattering regions. The apparatus also includes a projection apparatus. The projection apparatus includes a beam shaping device for producing the projection beam with a predetermined projection beam cross-section in the mask plane, and a positioning device for moving the projection beam cross-section in the mask plane along a predetermined path over the mask parallel to the direction into which the struts extend. The apparatus also includes a sensor for supplying a measuring signal which is dependent on the number of charged particles impinging on a mark region provided on the mask.